What is Claimed Is:

1. A method of selecting one of a plurality of predetermined forces for a clamping mechanism to apply to a paint container in a paint mixing machine without using a force measuring sensor and without using a distance measuring sensor, the method comprising:

a. monitoring a voltage applied to and a current conducted through a clamp motor;

b. determining when a rise in current occurs and calculating the distance the clamping mechanism has traveled based on the voltage and time of energization of the clamp motor; and

c. selecting a clamping current corresponding to one of a plurality of clamping forces, based on the distance the clamping mechanism has traveled until the current rise.

2. The method of claim 1 wherein the clamping mechanism has a movable plate driven by the clamp motor and the method further includes an additional step before step a. of:

a0. determining a home position for the movable plate by directing the movable plate to an end of travel position and monitoring for a current rise in the clamp motor when the movable plate reaches an obstruction at the end of travel position.

3. The method of claim 2 wherein the distance traveled in step b. is the distance from the home position to a clamping position engaging a paint container in the clamping mechanism of the paint mixing machine.

4. The method of claim 2 wherein step a0. further comprises determining a home position for the movable plate by applying a predetermined voltage to the clamp motor to cause movement of the movable plate in an upward direction and monitoring current until a predetermined clamp motor current is exceeded for about 300 milliseconds.

5. The method of claim 4 wherein the predetermined voltage is about 85 volts.

6. The method of claim 4 wherein the predetermined clamp motor current is about 1.5 amperes.

7. The method of claim 4 wherein step a0. further comprises applying a current pulse to the clamp motor to cause movement of the movable plate in the upward direction before applying the predetermined voltage.

8. The method of claim 7 wherein the current pulse is about 200 milliseconds duration.

9. The method of claim 7 wherein the current pulse is about 4.5 amperes based on about 120 volts AC using open loop phase control for the electrical power applied to the clamp motor.

10. The method of claim 2 wherein, when the movable plate is in a clamping condition, step a0. further comprises determining a home position for the movable plate by applying a plurality of current pulses to the clamp motor to cause movement in the upward direction, followed by applying a predetermined voltage to the clamp motor to cause movement of the movable plate in the upward direction and monitoring current until a predetermined clamp motor current is exceeded for about 300 milliseconds.

11. The method of claim 10 wherein each of the plurality of current pulses are about 200 milliseconds duration.

12. The method of claim 11 wherein each of the plurality of current pulses are about 4.5 amperes based on about 120 volts AC using open loop phase control for the electrical power applied to the clamp motor.

13. The method of claim 10 wherein the predetermined clamp motor current is a first predetermined clamp motor current and the clamp motor is allowed to draw current up to a second predetermined clamp motor current greater than the first predetermined clamp motor current for up to a predetermined time interval from the time power is initially applied to the clamp motor.

14. The method of claim 13 wherein the second predetermined clamp motor current is about 2.5 amperes.

15. The method of claim 13 wherein the predetermined time interval is about 2.5 seconds.

16. The method of claim 1 wherein the distance traveled by the movable plate is determined by monitoring the voltage applied to the clamp motor and the time the voltage is applied.

17. The method of claim 16 wherein the voltage applied to the clamp motor is applied to an armature with a separately powered field.

18. The method of claim 17 wherein the separately powered field is a permanent magnet field.

19. The method of claim 17 wherein the voltage applied to the motor is provided by a closed loop phase control.

20. Apparatus for automatically applying one of a plurality of clamping forces via a clamping mechanism to a paint container in a paint mixing machine, without a force measuring sensor and without a distance measuring sensor, the apparatus comprising:

a. voltage monitoring means for monitoring a clamp motor voltage applied to a clamp motor;

b. current monitoring means for monitoring a clamp motor current conducted through the clamp motor;

c. clamp detecting means for determining when a rise in clamp motor current occurs and for calculating the distance the clamping mechanism has traveled until the rise in clamp motor current occurs, based on the clamp motor voltage and a time it is applied; and

d. clamp force selection means for selecting a clamping current corresponding to one of a plurality of clamping forces based on the distance traveled by the clamping mechanism until clamping is detected by the clamp detecting means.

21. The apparatus of claim 20 wherein the plurality of clamping forces comprise a pair of clamping forces and wherein the apparatus further comprises

e. a pair of selector switches to select a pair of clamping forces for the plurality of clamping forces from among a set of clamping forces corresponding to a set of clamp motor currents.

22. The apparatus of claim 20 wherein the clamping force selection means selects from a high clamping force and a low clamping force, with the high clamping force corresponding to a high clamping zone, and with a low clamping force selected corresponding to a low clamping zone, the clamp force selection means selecting:

i. a high clamping current when the clamping mechanism is in the high clamping zone, and

ii. a low clamping current when the clamping mechanism is in the low clamping zone.